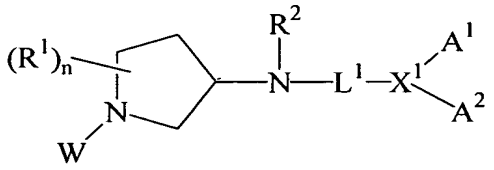
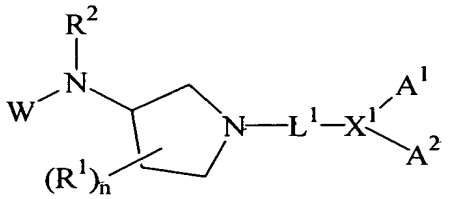
Claims

1. A compound of the formula



(1)



(2)

or the salts thereof, including all stereoisomeric forms thereof, wherein:

X^1 is CR^3 or N;

W is L^2-A^3 or $X^1(A^1)(A^2)$;

each of L^1 and L^2 is a C_1-C_{10} optionally substituted alkylene or C_2-C_{10} optionally substituted alkenylene, wherein one or more said C is optionally replaced by a heteroatom selected from N, O or S, or further substituted with =O, or both;

each of A^1, A^2 and A^3 is independently an optionally substituted 5-, 6- or 7-membered aliphatic or aromatic ring optionally containing one or more heteroatoms selected from O, N and S, and optionally fused to an additional ring;

R^1 and R^2 are noninterfering substituents; and

R^3 is H or a noninterfering substituent;

with the proviso that if L^1 is less than three linking atoms, R^2 cannot be hydrogen or L^1 must contain a C=O if R^2 is hydrogen.

2. The compound of claim 1, wherein R^1 is C_1-C_6 alkyl, C_2-C_6 alkenyl, or C_2-C_6 alkynyl, each optionally substituted, and optionally containing one or more heteroatoms selected from O, N and S, or R^1 is an inorganic substituent, or two R^1 form =O or =NOH, and n is 0-3.

3. The compound of claim 2, wherein said R^1 is halo, NO_2, SO_2, SO, NO, =O, =NOH, or COOR wherein R is H or C_1-C_6 alkyl.

4. The compound of claim 1, wherein R^2 is H, lower alkyl or lower alkenyl.

5. The compound of claim 4, wherein R^2 is H or methyl.

6. The compound of claim 1, wherein L^1 is C_1-C_8 alkylene or C_1-C_8 alkenylene, optionally substituted by =O.

7. The compound of claim 1, wherein L^1 is substituted by =O.

8. The compound of claim 7, wherein said =O is adjacent to NR^2 in formula 1, or adjacent to the nitrogen atom on the pyrrolidinyl ring in formula 2.

9. The compound of claim 1, wherein each of A^1, A^2 and A^3 is independently optionally substituted phenyl, cyclohexyl, 2-, 3- or 4-pyridyl, indolyl, 2- or 4-pyrimidyl, pyridazinyl, benzotriazolyl, or benzimidazolyl.

10. The compound of claim 9, wherein said each of A^1, A^2 and A^3 is substituted with a halo, alkoxy or alkyl.

11. The compound of claim 9, wherein each of A^1, A^2 and A^3 is independently phenyl, cyclohexyl, pyridyl or pyrimidyl.

12. The compound of claim 11, each of A^1, A^2 and A^3 is phenyl, optionally substituted with a halogen.

13. The compound of claim 1, wherein W is L^2-A^3, and A^3 is phenyl, cyclohexyl, 2-, 3- or 4-pyridyl, indolyl, 2- or 4-pyrimidyl, pyridazinyl, benzotriazolyl, or benzimidazolyl, each optionally substituted with one or more substituents.

14. The compound of claim 13, wherein A^3 is phenyl or pyridyl optionally substituted with a halo, alkoxy or alkyl.

15. The compound of claim 1, selected from the group consisting of (R)-N-{1-[6,6-Bis-(4-fluoro-phenyl)-hexanoyl]-pyrrolidin-3-yl}-3,5-di-tert-butyl-4-methoxy-N-methyl-benzamide;

(R)-6,6-Bis-(4-fluoro-phenyl)-hexanoic acid [1-(3,5-di-tert-butyl-4-methoxy-benzoyl)-pyrrolidin-3-yl]-methyl-amide;

(R)-N-(1-Benzhydryl-pyrrolidin-3-yl)-N-methyl-3,3-diphenyl-propionamide;

(S)-N-{1-[6,6-Bis-(4-fluoro-phenyl)-hexanoyl]-pyrrolidin-3-yl}-3,5-di-tert-butyl-4-methoxy-N-methyl-benzamide;

(S)-6,6-Bis-(4-fluoro-phenyl)-hexanoic acid [1-(3,5-di-tert-butyl-4-methoxy-benzoyl)-pyrrolidin-3-yl]-methyl-amide;

(S)-N-(1-Benzhydryl-pyrrolidin-3-yl)-N-methyl-3,3-diphenyl-propionamide;

(R)-N-Methyl-3,3-diphenyl-N-(1-pyridin-4-ylmethyl-pyrrolidin-3-yl)-propionamide;

(R)-N-Methyl-3,3-diphenyl-N-(1-pyridin-3-ylmethyl-pyrrolidin-3-yl)-propionamide;

(R)-N-Methyl-3,3-diphenyl-N-(1-pyridin-2-ylmethyl-pyrrolidin-3-yl)-propionamide;

(R)-N-Methyl-3,3-diphenyl-N-[1-(phenyl-pyridin-4-yl-methyl)-pyrrolidin-3-yl]-propionamide;

(R)-N-Methyl-3,3-diphenyl-N-[1-(phenyl-pyridin-3-yl-methyl)-pyrrolidin-3-yl]-propionamide;

(R)-N-Methyl-3,3-diphenyl-N-[1-(phenyl-pyridin-2-yl-methyl)-pyrrolidin-3-yl]-propionamide;

(S)-N-Methyl-3,3-diphenyl-N-(1-pyridin-4-ylmethyl-pyrrolidin-3-yl)-propionamide;

(S)-N-(1-Benzhydryl-pyrrolidin-3-yl)-2-diphenylamino-N-methyl-acetamide;

(S)-2-[(1-Benzhydryl-pyrrolidin-3-yl)-methyl-amino]-N,N-diphenyl-acetamide;

(S)-3-Benzhydryl-1-(1-benzhydryl-pyrrolidin-3-yl)-1-methyl-urea;

(S)-N-Methyl-3,3-diphenyl-N-(1-pyridin-3-ylmethyl-pyrrolidin-3-yl)-propionamide;

(S)-N-Methyl-3,3-diphenyl-N-(1-pyridin-2-ylmethyl-pyrrolidin-3-yl)-propionamide;

(R)-{1-[6,6-Bis-(4-fluoro-phenyl)-hexyl]-pyrrolidin-3-yl}-(3,5-di-tert-butyl-4-methoxy-benzyl)-methyl-amine;

(R)-[6,6-Bis-(4-fluoro-phenyl)-hexyl]-[1-(3,5-di-tert-butyl-4-methoxy-benzyl)-pyrrolidin-3-yl]-methyl-amine;

(S)-{1-[6,6-Bis-(4-fluoro-phenyl)-hexyl]-pyrrolidin-3-yl}-(3,5-di-tert-butyl-4-methoxy-benzyl)-methyl-amine;

(S)-[6,6-Bis-(4-fluoro-phenyl)-hexyl]-[1-(3,5-di-tert-butyl-4-methoxy-benzyl)-pyrrolidin-3-yl]-methyl-amine;

(R)-N-{1-[(4-Chloro-phenyl)-phenyl-methyl]-pyrrolidin-3-yl}-N-methyl-3,3-diphenyl-propionamide;

(S)-N-{1-[(4-Chloro-phenyl)-phenyl-methyl]-pyrrolidin-3-yl}-N-methyl-3,3-diphenyl-propionamide;

(R)-N-{1-[(3-Chloro-phenyl)-phenyl-methyl]-pyrrolidin-3-yl}-N-methyl-3,3-diphenyl-propionamide;

(S)-N-{1-[(3-Chloro-phenyl)-phenyl-methyl]-pyrrolidin-3-yl}-N-methyl-3,3-diphenyl-propionamide;

(R)-N-{1-[(2-Chloro-phenyl)-phenyl-methyl]-pyrrolidin-3-yl}-N-methyl-3,3-diphenyl-propionamide;

(S)-N-{1-[(2-Chloro-phenyl)-phenyl-methyl]-pyrrolidin-3-yl}-N-methyl-3,3-diphenyl-propionamide;

(R)-N-{1-[6,6-Bis-(4-fluoro-phenyl)-hexanoyl]-pyrrolidin-3-yl}-3,5-di-tert-butyl-N-methyl-benzamide;

(R)-6,6-Bis-(4-fluoro-phenyl)-hexanoic acid [1-(3,5-di-tert-butyl-benzoyl)-pyrrolidin-3-yl]-methyl-amide;

(S)-N-{1-[6,6-Bis-(4-fluoro-phenyl)-hexanoyl]-pyrrolidin-3-yl}-3,5-di-tert-butyl-N-methyl-benzamide;

(S)-6,6-Bis-(4-fluoro-phenyl)-hexanoic acid [1-(3,5-di-tert-butyl-benzoyl)-pyrrolidin-3-yl]-methyl-amide;

(R)-N-{1-[6,6-Bis-(4-fluoro-phenyl)-hexanoyl]-pyrrolidin-3-yl}-4-tert-butyl-N-methyl-benzamide

(R)-6,6-Bis-(4-fluoro-phenyl)-hexanoic acid [1-(4-tert-butyl-benzoyl)-pyrrolidin-3-yl]-methyl-amide;

(S)-N-{1-[6,6-Bis-(4-fluoro-phenyl)-hexanoyl]-pyrrolidin-3-yl}-4-tert-butyl-N-methyl-benzamide;

(S)-6,6-Bis-(4-fluoro-phenyl)-hexanoic acid [1-(4-tert-butyl-benzoyl)-pyrrolidin-3-yl]-methyl-amide;

(S)-N-Methyl-N-[1-(1-methyl-piperidin-4-ylmethyl)-pyrrolidin-3-yl]-3,3-diphenyl-propionamide;

(S)-N-Methyl-N-[1-(1-methyl-piperidin-3-ylmethyl)-pyrrolidin-3-yl]-3,3-diphenyl-propionamide;

(S)-N-Methyl-N-[1-(1-methyl-piperidin-2-ylmethyl)-pyrrolidin-3-yl]-3,3-diphenyl-propionamide;

4-[6,6-Bis-(4-fluoro-phenyl)-hexanoylamino]-1-(3,5-di-tert-butyl-4-methoxy-benzoyl)-pyrrolidine-2-carboxylic acid ethyl ester;

4-[6,6-Bis-(4-fluoro-phenyl)-hexanoylamino]-1-(3,5-di-tert-butyl-4-methoxy-benzoyl)-pyrrolidine-2-carboxylic acid;

1-Benzhydryl-4-(3,3-diphenyl-propionylamino)-pyrrolidine-2-carboxylic acid ethyl ester;

1-Benzhydryl-4-(3,3-diphenyl-propionylamino)-pyrrolidine-2-carboxylic acid;

N-(1-Benzhydryl-2-oxo-pyrrolidin-3-yl)-3,3-diphenyl-propionamide;

1-Benzhydryl-3-(1-benzhydryl-2-oxo-pyrrolidin-3-yl)-urea;

N-(1-Benzhydryl-2-oxo-pyrrolidin-3-yl)-2-diphenylamino-acetamide; and

2-(1-Benzhydryl-2-oxo-pyrrolidin-3-ylamino)-N, N-diphenyl-acetamide.

16. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable excipient.

17. A pharmaceutical composition comprising a compound of claim 15 and a pharmaceutically acceptable excipient.

18. A method for modulating calcium channel activity in a subject, comprising administering to a subject in need of such treatment a compound of claim 1 or a pharmaceutical composition thereof.

19. The method of claim 18, wherein said calcium channel activity is associated with stroke, anxiety, overactive bladder, inflammatory bowel disease, head trauma, migraine, chronic,

neuropathic and acute pain, epilepsy, hypertension, cardiac arrhythmias, neurological disorders, cardiovascular conditions, psychoses, schizophrenia, depression, drug and alcohol addiction and withdrawal, cancer, diabetes, infertility, or sexual dysfunction.

20. A method for ameliorating pain in a subject, comprising administering to a subject in need of such treatment a compound of claim 1 or a pharmaceutical composition thereof.